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November 2022

## USB-C PORT TESTER

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### Recommended Citation

INC, HP, "USB-C PORT TESTER", Technical Disclosure Commons, (November 04, 2022)  
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## USB-C Port Tester

**Abstract:** A USB-C port tester that determines whether the USB-C port receptacle of an electronic device is recessed behind the chassis panel at a proper depth to ensure good USB-C connectivity.

This disclosure relates to the field of Universal Serial Bus (USB) interfaces.

A technique is disclosed that provides a USB-C port screening device to detect out of specification USB-C port receptacles that are recessed too deeply into the electronic device which contains them. When the device is inserted into a USB-C port, it will externally indicate to the user whether the port receptacle is too deep.

PCs with USB-C ports can have manufacturing variability that leads to USB-C ports being out of specification. A USB-C port receptacle can be recessed too deeply behind the chassis panel resulting in poor contact with the pins on the device USB-C plug. This in turn results in unstable or non-functioning USB devices and connections. Such situations can cause a loss of time and money to the supplier and provides a poor user experience to the customer of the devices.

According to the present disclosure, and as understood with reference to the Figure, a USB-C port tester 10 is provided as a plug-in device containing a mechanical switch 20 and an external LED 30. The USB-C port tester 10 contacts the Configuration Channel (CC) lines of the USB-C receptacle 40 of an electronic device 50 when inserted therein and uses the CC voltage to power the LED 30 on. The switch 20 in the USB-C port tester 10 is normally closed to illuminate the LED 30. If the tester 10 contacts the chassis panel 60 of the device 50 when inserted into its USB-C receptacle 40, then the switch 20 will open and power to the LED 30 will be lost.

A USB-C port receptacle 40 that has a recessed depth within specification will not allow the USB-C port tester 10 to contact the chassis panel 60 when it is inserted. If the LED 30 is illuminated when the user inserts the USB-C port tester 10 into the receptacle 40 of the device 50, then the depth is within the spec and good USB connectivity will result. However, if the LED 30 turns off, the user knows that the USB-C port receptacle 40 is recessed too far behind the chassis panel 60 and is likely to result in poor USB connectivity.

The USB-C port tester can be implemented as a stand-alone device, as part of a factory assembly tool, or built into the connector of a USB-C cable.

The disclosed technique advantageously provides a USB-C port tester that can quickly detect whether or not a USB-C port receptacle is recessed from a device panel at a proper depth. It can be used in the factory to identify out-of-specification systems and repair them prior to customer shipment. This saves the user from a poor product experience and the vendor from a service call.

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